

USE OF THE CLEAN WATER STATE REVOLVING FUND FOR MUNICIPAL STORM WATER MANAGEMENT PROGRAMS

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The Need for Funding

Many municipalities have funded traditional storm water management activities through their general revenue sources. Traditionally, storm water management was thought of as minimizing street flooding and reducing property damage caused by peak runoff flows. Controlling the water quality aspects of urban runoff is a much more recent addition to the perceived municipal storm water management responsibility. With few exceptions, incorporating water *quality* controls in tandem with the traditional *quantity* management has occurred through the regulatory process. Therefore, municipalities typically consider the quality component of storm water management to be a new and separate mandate. Some municipalities recognized the link between storm water quantity and quality and took the initiative to establish comprehensive storm water management programs to address both issues. More often than not, however, municipalities began managing storm water quality and quantity together in response to regulations implementing the National Pollutant Discharge Elimination System (NPDES) permit program for storm water.

Subsequent to the 1987 amendments to the Clean Water Act (CWA), EPA published regulations establishing Phase I of the NPDES Storm Water Program in 1990. Under Phase I, EPA required NPDES permit coverage for discharges of storm water associated with industrial activity, discharges of storm water from construction sites greater than 5 acres in size, and storm water discharges from medium and large municipal separate storm sewer systems (MS4s) located in incorporated places or counties that serve populations of 100,000 or more. The Phase II Final Rule, also a result of the 1987 CWA Amendments, was published in the *Federal Register* on December 8, 1999. The Phase II rule requires NPDES permit coverage for storm water discharges from construction sites that disturb between 1 and 5 acres and from small MS4s, defined as those systems serving areas populations less than 100,000 to a lower limit based on the U.S. Census Bureau's definition of an urbanized area.

Costs of Municipal Storm Water Management Programs

Every four years, EPA conducts an assessment of the water quality and human health protection financial needs for wastewater collection and treatment systems, storm water management programs, and nonpoint source projects. This effort is the Clean Watersheds Needs Survey (CWNS), which is a joint effort between states and EPA. During the Construction Grants Program the CWNS only included project-specific costs

for traditional wastewater collection and treatment system needs. Over the last 10 years, however, the survey has expanded to include nonpoint source, estuary management, and storm water management projects. The storm water management projects typically included in the CWNS are the capital costs of developing and implementing municipal storm water management programs under the NPDES. Very few Phase I MS4s had provided sufficiently detailed planning information to serve as project-specific documentation for their needs in the last two surveys, thus the assessment of storm water management program costs and needs relied primarily on modeling. The modeling approach used in the 1996 CWNS for estimating Phase I MS4 needs assumed the use of regionally-targeted best management practices (BMPs) for the major program areas based on hydrologic regions and variation in soil characteristics. Beginning with the 2000 Clean Watersheds Needs Survey (CWNS 2000), several states made significant progress in obtaining documentation for eligible storm water management program (SWMP) elements from the operation of MS4s.

EPA was not required to conduct an analysis of the estimated cost expected to be incurred by municipalities when developing their SWMPs and otherwise implementing the 1990 Storm Water Phase I regulations. The 1996 CWNS estimate for municipal storm water management program elements (i.e., facilities) was \$7.4 billion, but this value was recognized as an underestimation. Table 1.1 provides a list of cost estimates that were identified in the Phase I storm water modeling for the 1996 CWNS. These costs largely represent one-time costs such as the cost to develop ordinances or the cost for initial training of municipal staff. Because such expenditures are generally discrete and predictable, as are structural BMPs, they are examples of items ideally suited to being included in the CWNS.

Table 1.1. Cost Estimates used in the Phase I storm water modeling for the 1996 CWNS.

Institutional Source Controls	Costs
Site Plan Review	\$10,000 per municipality for initial training
Inspection and Enforcement of Sediment and Erosion Control Plans at Construction Sites	\$10,000 per municipality for initial training
Proper Storage, Use and Disposal of Fertilizers, Pesticides, and Herbicides	\$10,000 per municipality for initial training
Used Oil Collection and Recycling Program	\$30,000 per municipality for an ordinance and development of regulations
Solid Waste Management/Litter Control Ordinance	\$15,000 per municipality to pass an ordinance
Pet Waste Removal/'Pooper Scooper' Ordinance	\$15,000 per municipality to pass an ordinance
Nonstructural Source Controls	Costs
Enhanced Litter Control	Cost to place additional trash receptacles - \$100.00 each (must be multiplied by the number of acres served by enhanced litter control)

Source: USEPA, 1997

EPA estimated costs to Phase II municipalities to be between \$848 million and \$981 million. The costs to MS4s are based on an annual per household cost of compliance. The individual household cost was

calculated based on two different approaches. First, EPA used a survey of Phase II storm water program costs developed by the National Association of Flood and Stormwater Management Agencies (NAFSMA). The NAFSMA Phase II Survey was sent to more than 1,500 communities potentially impacted by Phase II, with 121 communities responding. The communities were asked to report actual costs to implement any of the six minimum control measures (or equivalent) that they are currently implementing. Not all communities responded to each measure, and public involvement costs were not included (however, EPA believed that cities included public involvement costs with public education costs). Table 1.2 presents the average and percentile costs for five Phase II minimum control measures as estimated by the NAFSMA survey (USEPA, 1999).

Table 1.2. Average and Percentile Costs for Five Phase II Minimum Control Measures (Per Household Costs, 1998 Dollars)

	Public Education/ Outreach	Illicit Discharges	Erosion/ Sediment Control	Development	Municipal Runoff¹	Totals: All Categories
Mean Cost	\$0.91	\$1.78	\$1.84	\$2.64	\$1.75	\$8.93
Minimum	\$0	\$0.03	\$0.09	\$0.07	\$0.01	\$0.19
25%	\$0.08	\$0.20	\$0.30	\$0.37	\$0.14	\$1.09
50%	\$0.37	\$0.75	\$1.08	\$1.24	\$0.52	\$3.96
75%	\$1.01	\$2.65	\$2.10	\$2.79	\$1.63	\$10.17
95%	\$3.04	\$5.61	\$7.92	\$10.68	\$9.08	\$36.34
Maximum	\$5.97	\$5.95	\$13.10	\$17.47	\$12.19	\$54.68

Source: USEPA, 1999

¹ A single outlier was removed because it was 15 times the mean cost for all municipalities.

The NAFSMA survey found an average annual household cost for Phase II of \$9.16 (the table above lists \$8.93, and the difference is due to the addition of administrative costs of the program, including recordkeeping and reporting requirements of the rule).

EPA also looked at an alternative approach for estimating Phase II costs. Thirty-five Phase I MS4s were evaluated, with 26 providing adequate cost data. Smaller Phase I MS4s were selected in order to be comparable to Phase II communities. The average annual household costs to implement a program similar to the six minimum measures for these Phase I municipalities was \$9.08.

With the continual expansion of water quality protection initiatives in storm water management, municipalities are constantly faced with finding new and creative methods of funding projects. Additionally, as more Phase II communities develop their storm water management programs, traditional sources of funding will be less available, leaving storm water program managers with the need to find alternative ways to fund multiple projects.

Sources of Funding

Municipalities, counties, states, and private citizens have relied on a variety of sources of funding for storm water management projects. Largely, these have included storm water utilities, tax revenue, grants, loans, and fees. The Clean Water State Revolving Fund (CWSRF) program is one that is traditionally underutilized for funding storm water management programs. The CWSRF program was established in the 1987 amendments to the CWA under title VI. In these amendments, Congress instructed EPA to replace the Federal Construction Grant Program with the CWSRF program. Since its inception over ten years ago, all fifty states and Puerto Rico use the CWSRF Program. Using a formula determined by Congress in the 1987 CWA amendments, EPA grants each state an allotment of funds; the states then match up to 20 percent of the federal grant to set up their CWSRF program. The program acts as a revolving fund to provide independent and permanent sources of low interest loans for all types of water pollution control activities. It is a unique system that relies on the continuous awarding and repaying of the loans to provide a permanent funding source for water quality protection projects (USEPA, 2001). Communities, non-profit organizations, municipalities, counties, individuals, and citizens are all eligible to apply for CWSRF loans. To date, it has awarded more than \$34.3 billion, using more than 10,900 low interest loans (USEPA, 2002a).

Congress designed the CWSRF program to give each state the utmost flexibility in providing financial assistance. States can choose the types of assistance programs (e.g., loans, refinancing, purchasing, or guaranteeing local debt and purchasing bond insurance) and set the loan terms, interest rates, and repayment methods (EPA, 2002b). In addition to giving each state the authority to determine how to distribute funds, Congress awarded states complete flexibility in determining the types of projects eligible for funding. Over the years CWSRF monies have funded nonpoint source projects, wetland and estuary protection, storm water management programs, and traditional wastewater collection and treatment system projects. (USEPA, 2001).

Nationally, the CWSRF loan average interest is 2.4 percent (individual state loan interests vary), with repayment terms up to 20 years. Projects using CWSRF loans at this interest rate are funded using 23 percent less money than projects using the current market rate (USEPA, 2002a). CWSRF loans can be used to partially or wholly fund a project. To apply for a CWSRF loan, a public or private entity submits an application with the state-required information about the project. Most applications require a description of the problem and information about how the project will be implemented (e.g., specifics on the water quality and public health benefits, usually expressed in dollars per unit, the start and completion dates, as well as the cost disbursement plan). States use the application forms to rank the projects and create a list of priority projects that are eligible for CWSRF loans. These lists typically are called the project priority lists (PPL) or intended use plans (IUP). A state will fund the projects on the PPL or IUP as money is available. Depending on a state's program, projects that are not funded in one year might be transferred to the next year.

Typical Storm Water Management Projects Funded with CWSRF

Restrictions on the types of projects eligible for CWSRF money are determined by the state, however, as a general rule, projects should have a water quality or public health benefit. CWSRF loans can be used for funding the capital costs for developing and implementing municipal storm water programs as required by

an NPDES permit. This can include the costs for design, construction, and implementation of erosion and sediment control and storm water BMPs and development of a storm water management program; operation and maintenance costs are not funded by the CWSRF.

Since the expansion of the CWSRF program to include storm water and NPS projects, the number of projects funded with CWSRF loans has expanded. The increase was not apparent in the 1996 CWNS because needs for SWMP were mostly derived from modeling; however, the CWNS 2000 reported the increase because better data were available. Despite the increase, the number of loans for storm water management is still considerably less than the number of traditional wastewater collection and treatment loans. For example, the CWNS 2000 reports 20 states with municipal storm water management program needs, where as all 48 participating states had wastewater collection and treatment system needs. The projects that are submitted to the CWNS 2000 must be CWSRF eligible; the projects do not require funding by CWSRF. Only 5 states appeared to have used CWSRF loans to meet their storm water management program costs: Maryland, Florida, New Jersey, Colorado, and Nebraska. (USEPA, 2002c). The CWNS 2000 has strict data requirements that can prohibit some storm water management projects from being classified as storm water management needs. Projects that have a storm water management component that are not associated with an MS4 permit program are categorized as a nonpoint source (NPS) project in the CWNS 2000. Twenty-three states submitted needs for NPS projects; of these 23 states only 8 states (New York, New Jersey, North Dakota, Florida, Connecticut, Colorado, Wisconsin, and Maryland) appeared to have used CWSRF loans to meet their storm water management costs (USEPA, 2002c).

Below are examples of storm water management projects in the State of Maryland that were funded using CWSRF loans.

Baltimore County, Maryland

In 2000 Baltimore County developed a watershed management plan to identify storm water pollutants and storm water management retrofits for the three watersheds as part of their NPDES permit. The plan identified storm water management retrofits for 9 areas. The projects were designed to help control unmanaged storm water runoff in a fully developed watershed and to improve water quality. The County submitted a CWSRF loan application to the state for assistance with financing these projects. The CWSRF loan applications called for developing feasibility analyses, enhancing existing storm water facilities, designing extended detention ponds with shallow marshes, restoring stream channels, enhancing aquatic and riparian habitats, and retrofitting storm drain outfalls. Baltimore County applied for loans to cover approximately two-thirds of the engineering and construction costs; the county would pay the remaining one-third (USEPA, 2002d).

Howard County, Maryland

In 1999 Howard County conducted an assessment of all the publicly owned storm water management facilities in the Patapsco River Watershed. The County's NPDES permit required the County to determine the viability of its storm water management facilities. The study identified and ranked the facilities that were candidates for retrofitting. The county used the results of the study to apply for CWSRF loan

assistance with the retrofits. Six individual projects were identified and submitted as separate loan applications. Each project requested funds for reconstructing of sediment ponds, redesigning ponds to include shallow marshes and extended detention ponds, retrofitting ponds to include water quality management in addition to quantity control, removing concrete channels, adding forebays, implementing stream restoration projects, and planting riparian and aquatic vegetation. As with Baltimore County, the requested CWSRF loans covered approximately two-thirds of the engineering and construction costs; the county and other stakeholders (e.g., homeowners associations) covered the remaining one-third (USEPA, 2002d).

Below are several examples of storm water management projects that could have been funded partially or wholly using CWSRF loans.

Suffolk County, New York

In Suffolk County, New York, several projects were developed to prevent and contain road runoff from entering Long Island Sound. The county applied for 12 grants to construct several recharge basins and sediment traps to receive highway runoff and remove pollutants. The basins were designed to contain the 10-year design storm and the sediment traps were designed to intercept the first flush of runoff. For each grant, the county matched the amount of the state funds requested. In this case, if grant money was not available or if the county could not match the grant fund, the county could have applied to the state CWSRF program for a loan (USEPA, 2002d).

Malabar, Florida

The Town of Malabar is a Phase II community that is approximately 20 percent developed. Its storm water management system consists of swales and ditches, storm water pipes, baffle boxes, drain gutters, and outfall structures. In low lying areas the town experiences flooding of ditches, clogged drains, eroding stream channels, and discharges of pollutants into the Indian River Lagoon. Storm water management needs for this town include development and implementation of a Master Plan, construction of swales along streets, retrofitting of outfall structures, and addition of outfall structures. Although the town has developed a storm water utility fund, because the storm water system needs major upgrades, more funding will be needed beyond what the utility can provide. In this case, the town can apply for loans for both planning and engineering costs necessary to begin construction, in addition to the actual construction costs. The town has approximately 2,500 people, which allows the town to qualify for CWSRF benefits associated with a small community (USEPA, 2002d). For small communities, the state sets aside 15 percent of all the CWSRF loan funds (FLDEP, 2002).

Guadalupe, Arizona

The town of Guadalupe, in Maricopa County, will be constructing several retention basins along a canal and an outfall system to control storm water runoff. The canal has a history of ponding and flooding the nearby homes. The storm water collection system upgrades will contain the storm water runoff, prevent flooding, and remove pollutants. This is a good example of combining traditional flood control designs with

water quality protection techniques in the arid west. Maricopa County will be funding this initiative using tax money because the town of Guadalupe is not able to contribute financially. The CWSRF program could have been a viable alternative because the town of Guadalupe could have applied for loans directly (USEPA, 2002d).

Missouri

Across the State of Missouri there are several urban NPS projects that involved storm water management to prevent erosion and flooding. Examples of projects to be completed included, installation of rip-rap and/or grouted rock, retaining walls, culverts, natural bank stabilization, berms, gabions, detention ponds, inlets, and new storm sewers. The projects were submitted to the CWNS as needs for a particular watershed. These types of projects are all candidates for CWSRF loans for NPS pollution control. If the projects could be directly linked to an MS4 storm water management program, then the CWSRF loans would fall under the storm water management category (USEPA, 2002d).

Conclusion

Despite the fact that the CWSRF program has been available to fund storm water management programs at the local level for more than ten years, it is still a highly underutilized source of funding for this pollution source in most states. As storm water programs continue to evolve and communities, municipalities, and states begin to focus on the water quality benefits of storm water BMPs, finding creative financing mechanisms will become even more of a challenge. Using the CWSRF to fund part if not all of a project has already been demonstrated to be a practical mechanism for investing in elements of Phase I SWMPs. Phase I municipalities should continue to use the CWSRF loans as a viable source of funds as retrofits and upgrades are required. Consideration of using this funding source more widely should be strongly encouraged for Phase II municipalities. Additionally, communities that cannot show a link between a specific storm water management project and their MS4 storm water management program, should also consider the potential of CWSRF funding by describing their project as an NPS pollution control project.

Interested municipalities should investigate their state's PPL or IUPs for information about projects that are most important in their state. These lists can serve as an example of the types of projects that the state approves for CWSRF loans. It appears that in some instances, states are failing to adequately get the word out about the availability of the revolving loan funds for storm water projects. However, in other states, the impediments to using this funding sources for storm water projects is due more to competition from projects that address other water pollution sources, which are in many cases traditional wastewater collection and treatment systems.

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